

## SSVEO IFA List

Date:02/27/2003

STS - 94, OV - 102, Columbia ( 23 )

Time:04:02:PM

<u>Tracking No</u>	<u>Time</u>	<u>Classification</u>	<u>Documentation</u>	<u>Subsystem</u>
MER - 2	<b>MET:</b> 00:00:12 <b>GMT:</b> 182:18:14	Problem	<b>FIAR</b> <b>SPR</b> <b>IPR</b>	<b>IFA</b> STS-94-V-01 <b>UA</b> <b>PR</b> ECL-2-A0105
				<b>ECLSS</b> <b>Manager:</b> Nanette Cerna x39045 <b>Engineer:</b> Dennis Veselka x40126

**Title:** High-Load FES Inboard Duct Temperature Response During Ascent (ORB)

**Summary:** On 2 of the 3 previous flights of OV-102, the FES high-load duct temperatures have dropped off sharply during ascent (STS-78 and STS-83). As a result, STS-94 was launched with both the system A and B high-load duct heaters activated. During this mission, the inboard duct temperature dropped to 175 ?F by 182:18:14 G.m.t. (approximately 12 minutes MET). The temperature normally remains above 190 ?F with only one heater activated. Throughout the occurrence, the evaporator outlet temperatures were stable. It is suspected that excess water carryover is the cause of the duct temperature drop. There was no mission impact.

The STS-94 post flight troubleshooting found no abnormality. Both pri A & B spray valves were replaced prior to STS-80, and FES duct temperature response has been abnormal since. Since all ascents have been flown on the FES pri A controller, using the A spray valve, the pri B controller and spray valve will be utilized for STS-87 ascent.

<u>Tracking No</u>	<u>Time</u>	<u>Classification</u>	<u>Documentation</u>	<u>Subsystem</u>
MER - 7	<b>MET:</b> 00:00:35	Problem	<b>FIAR</b>	<b>IFA</b> STS-94-V-02
EGIL-01	<b>GMT:</b> 182:18:37		<b>SPR</b> <b>IPR</b> 87V-0001	<b>FCP</b> <b>Manager:</b> Howard Wagner x3904 <b>Engineer:</b> Ken Adams x37571

**Title:** Fuel Cell 3 Substack 2 CPM Output Shift (ORB)

**Summary:** A data review indicates that the fuel cell 3 (s/n 118) substack 2 CPM measurement increased 32 mV in 23 minutes, from 2 mV at 182:18:37 G.m.t (00:00:35 MET) to 34 mV at 182:19:00 G.m.t (00:00:58 MET). There is the potential that this channel of the fuel cell 3 CPM is not functioning properly. A failure mode in the CPM circuitry exists that could cause incorrect CPM output signals that would not be detected by the self-test (the self-tests have been good on this channel). A memorandum by IFC (SIM 038) states that a failure of resistor R115 would read 37 mV (0.375V) if open for a positive bias voltage differential. It would remain at this value until the actual value increased to 185 mV, then it would jump to 500 mV. The CPM output that is displayed in downlist is an even value with a 2 mV data bit. With instrumentation accuracy the output could read 36 +/- 6 mV.

Through the mission, the measurement slowly increased from 36 mV to 44 mV. It decreased slightly during fuel cell purges. The next to last purge was deleted, and the reading climbed to 46 mV prior to landing. The CPM value began decreasing during normal end-of-mission powerdown procedures and reached a steady state value of 18 mV after landing. Standard postflight fuel cell checkout confirmed the anomaly and the CPM was R&Red.

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<u>Tracking No</u>	<u>Time</u>	<u>Classification</u>	<u>Documentation</u>	<u>Subsystem</u>
MER - 10	<b>MET:</b> 06:21:52	Problem	<b>FIAR</b>	<b>IFA</b> STS-94-V-03 D&C,EPDC
GNC-01	<b>GMT:</b> 189:15:54		<b>SPR</b>	<b>UA</b> <b>Manager:</b> Ronn Moore
			<b>IPR</b> 87V-0003	x31719
				<b>Engineer:</b> Andy Farkas

**Title:** ASA 4 Redundant Power Loss (ORB)

**Summary:** At 189:15:54:30 Gmt (06:21:52:30 MET), the ASA 4 power on command C (switch scan measurement - V79S4143E) and the associated RPC (powered by MNC APC3) output discrete measurement (V76X4210E) went from ON to OFF, indicating loss of redundant power to ASA 4. This contact of the ASA 4 switch receives its power from one contact of the FCS channel 4 switch (powered by CNTLCA2), which also provides power to a contact of the ATVC 4 power switch. A separate contact of the ASA 4 switch, which provides control power to a redundant power RPC (powered by MNA APC1) continued to indicate ON, maintaining power to ASA 4. At 189:18:05:03 Gmt (07:00:03:03 MET), the affected switch scan and RPC output discretes returned to the normal ON state. At 189:21:42:44 Gmt (07:03:40:44 MET), the measurements returned to the OFF state.

At 190:17:39:52 Gmt (07:23:37:52 MET), the ground had the crew cycle the ATVC 4 power switch ON for about 15 seconds to determine if the FCS channel 4 contact was supplying CNTLCA2 power to the ASA 4 and ATVC 4 switches. When the ATVC 4 switch was placed to ON, it transferred power properly; at the same time, the ASA 4 power on command C and the associated RPC output discrete both changed to ON and remained on for the remainder of the mission. FCS checkout and entry/landing had no effect on ASA 4 power. After the crew had egressed, KSC ground personnel cycled the ATVC 4 power switch several times without affecting ASA 4

power. OPF testing found no anomalies. The ATVC 4 switch assembly was R&Red. X-ray of the switch housing showed a loose solder particle which most probably created a short between two switch contacts and caused the anomaly.

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